CLAIMS

What is claimed is:

1. 1. A method of managing a plurality of data communication connections having

2. differing data communication rates, comprising:

3. A) assigning said data communication connections to a plurality of buckets that have

4. a circular order;

5. B) establishing a bucket of said plurality of buckets as a current bucket and

6. establishing another bucket as a fast bucket;

7. C) establishing a connection assigned to said current bucket as a current connection;

8. D) communicating data over said current connection;

9. E) in response to communicating data over said current connection, re-assigning said

10. current connection to a different bucket of said plurality of buckets based upon

11. where said current bucket resides in said circular order and a bandwidth

12. estimation of said current connection;

13. F) repeating steps (C), (D) and (E) for each connection assigned to said current

14. bucket;

15. G) establishing a next bucket as a new current bucket, wherein said next bucket

16. follows said current bucket in said circular order;

17. waiting until the earlier of (1) when any connection in the fast bucket is ready for

18. communication or (2) when a pre-defined period of time elapses; and

19. repeating step (F) and (G) for each bucket of said plurality of buckets.

1. 2. The method recited in claim 1, further comprising always placing each newly

2. established connection in the fast bucket until a pre-determined number of bytes have

3. been communicated on the newly established connection.

1   3.   The method recited in claim 1, further comprising:

2   measuring time elapsed in processing connections in a bucket; and

3   reducing a rate of establishing the connections when the measured time increases.

1   4.   A computer-readable medium carrying one or more sequences of instructions for

2   managing a plurality of data communication connections having differing data

3   communication rates, wherein execution of the one or more sequences of instructions

4   by one or more processors causes the one or more processors to perform the steps of:

5   A) assigning said data communication connections to a plurality of buckets that have

6   a circular order;

7   B) establishing a bucket of said plurality of buckets as a current bucket and

8   establishing another bucket as a fast bucket;

9   C) establishing a connection assigned to said current bucket as a current connection;

10   D) communicating data over said current connection;

11   E) in response to communicating data over said current connection, re-assigning said

12   current connection to a different bucket of said plurality of buckets based upon

13   where said current bucket resides in said circular order and a bandwidth

14   estimation of said current connection;

15   F) repeating steps (C), (D) and (E) for each connection assigned to said current

16   bucket;

17   G) establishing a next bucket as a new current bucket, wherein said next bucket

18   follows said current bucket in said circular order;

19   waiting until the earlier of (1) when any connection in the fast bucket is ready for

20   communication or (2) when a pre-defined period of time elapses; and

21   H) repeating step (F) and (G) for each bucket of said plurality of buckets.

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1   5.   The computer readable media recited in claim 4, wherein the steps further comprise

2   always placing each newly established connection in the fast bucket until a pre-

3   determined number of bytes have been communicated on the newly established

4   connection.

1   6.   The computer readable media recited in claim 4, wherein the steps further comprise:

2   measuring time elapsed in processing connections in a bucket; and

3   reducing a rate of establishing the connections when the measured time increases.

1   7.   A computer system, comprising:

2   a processor; and

3   a memory coupled to said processor, said memory comprising one or more sequences

4   of instructions for managing a plurality of data communication connections

5   having differing data communication rates, wherein execution of the one or

6   more sequences of instructions by said processor causes the processor to

7   perform the steps of:

8   A) assigning said data communication connections to a plurality of buckets that have

9   a circular order;

10   B) establishing a bucket of said plurality of buckets as a current bucket and

11   establishing another bucket as a fast bucket;

12   C) establishing a connection assigned to said current bucket as a current connection;

13   D) communicating data over said current connection;

14   E) in response to communicating data over said current connection, re-assigning said

15   current connection to a different bucket of said plurality of buckets based upon

16   where said current bucket resides in said circular order and a bandwidth

17   estimation of said current connection;

18   F) repeating steps (C), (D) and (E) for each connection assigned to said current

19   bucket;

20   G) establishing a next bucket as a new current bucket, wherein said next bucket

21   follows said current bucket in said circular order;

22   waiting until the earlier of (1) when any connection in the fast bucket is ready for

23   communication or (2) when a pre-defined period of time elapses; and

24   H) repeating step (F) and (G) for each bucket of said plurality of buckets.

1   8.   The computer system recited in claim 7, wherein the steps further comprise always

2   placing each newly established connection in the fast bucket until a pre-determined

3   number of bytes have been communicated on the newly established connection.

1   9.   The computer system recited in claim 7, wherein the steps further comprise:

2   measuring time elapsed in processing connections in a bucket; and

3   reducing a rate of establishing the connections when the measured time increases.